NASA/JPL
4800 Oak Grove Dr.
Pasadena, CA 91109
Id no.: 11887

EQUIPMENT DESCRIPTION:

Equipment	ID No.	Connected To	Source Type/ Monitoring Unit	Emissions	Conditions
Process 1: INTERNAL COMBUSTION EQUIPMENT					
System 1: BUILDING 150					
INTERNAL COMBUSTION ENGINE, EMERGENCY POWER, CUMMINS, MODEL NO. QSB7-G3, DIESEL FUEL, WITH AFTERCOOLER, TURBOCHARGER, 250 BHP A/N 509746	D165		NOX: PROCESS UNIT	NOX: 469 LBS/1000 GAL DIESEL (1); PM (9)	B61.1, B61.3, D12.2, E448.2, H23.9, K67.10
System 7: BUILDING 277					
INTERNAL COMBUSTION ENGINE, EMERGENCY POWER, CATERPILLAR, MODEL NO. C18 DITA, DIESEL FUEL, WITH AFTERCOOLER, TURBOCHARGER, 900 BHP A/N 510207	D166		NOX: PROCESS UNIT	NOX: 469 LBS/1000 GAL DIESEL (1); PM (9)	B61.1, B61.3, D12.2, E448.2, H23.9, K67.10

A/N 509780: Title V Permit Revision

CONDITIONS:

B61.1:
The operator shall not use fuel oil containing the following specified compounds:

Compound	Weight Percent
Sulfur less than or equal to	0.05

B61.3:
The operator shall not use fuel oil containing the following specified compounds:

Compound	PPM BY WEIGHT
Sulfur less than or equal to	15

D12.2:
The operator shall install and maintain a(n) non-resettable elapsed time meter to accurately indicate the elapsed operating time of the engine.

E448.2:
The operator shall comply with the following requirements:

The engine shall not be operated more than 200 hours in any one year, which includes 50 hours in any one year for maintenance and testing.

Operation beyond the allotted time for engine maintenance and testing shall be allowed only in the event of a loss of grid power or up to 30 minutes prior to a rotating outage, provided that the utility distribution company has ordered rotating outages in the control area where the engine is located or has indicated that it expects to issue such an order at a certain time and the engine is located in a utility service block that is subject to the rotating outage.

In the event as described in the paragraph above, the engine shall be terminated immediately after the utility distribution company advises that a rotating outage is no longer imminent or in effect.

This engine shall not be used as part of an interruptible service contract in which a facility receives a payment or reduced rates in return for reducing electric load on the grid when requested by the utility or the grid operator.

H23.9:
This equipment is subject to the applicable requirements of the following rules or regulations:

Contaminant	Rule	Rule/Subpart
Sulfur compounds	District Rule	431.2
PM	District Rule	1470

K67.10:
The operator shall keep records, in a manner approved by the District, for the following parameter(s) or item(s):

An engine operating log shall be kept and maintained on file to record when this engine is started manually. The log shall list the date of operation, the timer reading in hours at the beginning and end of operation and the reason of operation.

By January 15th of each year, the operator shall total and record the total hours of operation (including hours for both manual operation and automatic operation) for the previous year.

All records required by this permit shall be kept in a format that is acceptable to the District, shall be retained on the premises for at least three years and shall be made available to any District representative upon request.

BACKGROUND:

NASA/JPL submitted these applications to permit two new emergency, diesel-fueled internal combustion engines. Both engines will be used to power electrical generators for emergency electrical power. Both engines hold AQMD certification permits which can be found under a/n 471081 (D165) and 453933 (D166). Both engines meet current BACT emission limits for major-source facilities. D165 will replace D2 and D166 will replace D11.

NASA/JPL is a Title V facility. A Title V renewal permit was issued to this facility on October 1, 2006. NASA/JPL has proposed to revise their Title V renewal permit by adding two internal combustion engines, device nos. D165 (a/n 509746) and D166 (a/n 510207). This permit revision is considered as a "de minimis significant permit revision" to the Title V renewal permit, as described in the Regulation XXX evaluation.

PROCESS DESCRIPTION:

The engines will be used to provide emergency electrical power for building operations. Aside from emergency use, the engines will be operated less than 50 hours in any one year for maintenance and testing purposes. Annual hours of operation shall not exceed 200 hours.

EMISSIONS CALCULATIONS:

The engines were designed to operate below BACT emission rates for emergency diesel-fueled internal combustion engines.

A/N 509746 – 250 HP:

Pollutant	Manufacturer Engine Rate (g/bhp-hr)
HC	0.09
NOx	2.67
CO	1.19
PM	0.13

Operating schedule = 1 hr/wk, 1 day/wk
BHP = 250
1 lb = 454 g
PM10 = PM

Hourly HC emissions = 0.09 * 1/454 * 250 = 0.05 lb/hr
Daily HC emissions = 0.05 lb/day

Hourly NOx emissions = 2.67 * 1/454 * 250 = 1.47 lb/hr

Daily NOx emissions = 1.47 lb/day

Hourly CO emissions = 1.19 * 1/454 * 250 = 0.66 lb/hr
Daily CO emissions = 0.66 lb/day

Hourly PM10 emissions = 0.13 * 1/454 * 250 = 0.07 lb/hr
Daily PM10 emissions = 0.07 lb/day

A/N 510207 – 900 HP:

Pollutant	Manufacturer Engine Rate (g/bhp-hr)
HC	0.05
NOx	4.17
CO	0.43
PM	0.051

Operating schedule = 1 hr/wk, 1 day/wk
BHP = 900
1 lb = 454 g
PM10 = PM

Hourly HC emissions = 0.05 * 1/454 * 900 = 0.1 lb/hr
Daily HC emissions = 0.1 lb/day

Hourly NOx emissions = 4.17 * 1/454 * 900 = 8.26 lb/hr
Daily NOx emissions = 8.26 lb/day

Hourly CO emissions = 0.43 * 1/454 * 900 = 0.85 lb/hr
Daily CO emissions = 0.85 lb/day

Hourly PM10 emissions = 0.051 * 1/454 * 900 = 0.1 lb/hr
Daily PM10 emissions = 0.1 lb/day

RULE ANALYSIS

Rule 212 (c)(1): This section requires a public notice for all new or modified permit units that emit air contaminants located within 1,000 feet from the outer boundary of a school. The facility is not located within 1,000 feet of the outer boundary of a school. The closest school is located over 1,700 feet from the facility.

Rules 212 (c)(2) & 212(g): A public notice is not required for this project since the emissions increase does not exceed any of the daily maximums as specified in Rule 212(g).

	Maximum Daily Emissions					
	ROG	**NO_x**	**PM_{10}**	**SO_2**	**CO**	**Pb**
Emission increase	0	9.7	0	0	1.5	0
MAX Limit (lb/day)	**30**	**40**	**30**	**60**	**220**	**3**
Compliance Status	Yes	Yes	Yes	Yes	Yes	Yes

Rule 212(c)(3): A public notice is not required for this project since there with not be an increase in emissions of toxic air contaminants listed in Table I of Rule 1401 that will result in a cancer risk equal or greater than one in a million.

Rules 401 & 402: AQMD database has no records of visible emissions or nuisance complaints against this facility. Compliance with these requirements is expected with the proper operation of the equipment.

Rule 431.2: NASA/JPL shall use a diesel fuel in which the sulfur content will not exceed 15 ppm by weight (0.0015% by weight). Compliance is achieved.

Rule 1303(a): These AQMD-certified engines are designed and manufactured to operate under specific BACT emission limits. Compliance with BACT is achieved.

Rules 1303(b)(1) & 1303(b)(2): Emergency ICEs are exempt from modeling requirements and emission offsets.

Rule 1303(b)(4): The facility is expected to be in full compliance with all applicable rules and regulations of the District.

Rule 1401: Not applicable to emergency ICEs.

Rule 1470(c)(1): Compliant fuel will be used in both engines.

Rule 1470(c)(2)(B): NASA is expected to operate both engines in compliance with this section.

Rule 1470(c)(2)(C)(i)(I): Both engines will emit PM at a rate less than 0.15 g/bhp-hr, compliance is achieved.

RULE 2005: NASA/JPL is a NOx RECLAIM facility. The proposed project will result in a slight increase in NOx emissions. For this reason, compliance with Rule 2005 must be achieved prior to issuing a permit for the proposed project. The new ICEs will meet the requirements of Rule 2005(c), that is, the new ICEs will (1) be operated with current BACT, (2) are exempt from modeling requirements [Rule 2005(k)(5)] and (3) the facility holds sufficient RECLAIM trading credits to offset the annual emission increase for the first year of operation of the new ICEs.

REGULATION XXX:

This facility is in the RECLAIM program. The proposed project is considered as a "de minimis significant permit revision" for non-RECLAIM pollutants or hazardous air pollutants (HAPs), and a "minor permit revision" for RECLAIM pollutants to the RECLAIM/Title V facility permit.

Non-RECLAIM Pollutants or HAPs

Rule 3000(b)(6) defines a "de minimis significant permit revision" as any Title V permit revision where the cumulative emission increases of non-RECLAIM pollutants or HAPs from these permit revisions during the term of the permit are not greater than any of the following emission threshold levels:

Air Contaminant	Daily Maximum (lbs/day)
HAP	30
VOC	30
NOx*	40
PM_{10}	30
SOx*	60
CO	220

* Not applicable if this is a RECLAIM pollutant

To determine if a project is considered as a "de minimis significant permit revision" for non-RECLAIM pollutants or HAPs, emission increases for non-RECLAIM pollutants or HAPs resulting from all permit revisions that are made after the issuance of the Title V renewal permit shall be accumulated and compared to the above threshold levels. This proposed project is the 4^{th} permit revision to the Title V renewal permit issued to this facility on October 1, 2006. The following table summarizes the cumulative emission increases resulting from all permit revisions since the Title V renewal permit was issued:

Revision	HAP	VOC	NOx*	PM10	SOx	CO
Previous Total	0	0	2	0	0	0
4th Permit Revision, add ICEs (Device nos. D165 & D166)	0	0	9.7	0	0	1.5
Cumulative Total	0	0	12	0	0	2
Maximum Daily	30	30	40*	30	60	220

* RECLAIM pollutant, not subject to emission accumulation requirements

Since the cumulative emission increases resulting from all permit revisions are not greater than any of the emission threshold levels, this proposed project is considered as a "de minimis significant permit revision" for non-RECLAIM pollutants or HAPs.

RECLAIM Pollutants

Rule 3000(b)(12)(A)(v) defines a "minor permit revision" as any Title V permit revision that does not result in an emission increase of RECLAIM pollutants over the facility starting Allocation plus nontradeable Allocations, or higher Allocation amount which has previously undergone a significant permit revision process.

Since NOx is a RECLAIM pollutant for this facility, a separate analysis shall be made to determine if the proposed permit revision is considered a "minor permit revision" for RECLAIM pollutants. Section B of the Title V permit shows that this facility's NOx starting Allocation plus the non-tradable Allocation is 55,155 pounds. The proposed project is expected to result in an increase of 9.7 lbs/day of NOx emissions from this permit revision, less than the starting Allocation plus the non-tradable Allocations of 55,155 pounds. As a result, this proposed project is considered as a "minor permit revision" for RECLAIM pollutants.

RECOMMENDATION

The proposed project is expected to comply with all applicable District Rules and Regulations. Since the proposed project is considered as a "de minimis significant permit revision" for non-RECLAIM pollutants or hazardous air pollutants (HAPs), and a "minor permit revision" for RECLAIM pollutants, it is exempt from the public participation requirements under Rule 3006(b). A proposed permit incorporating this permit revision will be submitted to EPA for a 45-day review pursuant to Rule 3003(j). If EPA does not have any objections within the review period, a revised Title V/RECLAIM permit will be issued to this facility.

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